# Solid State Energy Conversion Alliance Core Technology Program (CTP) Activity - PNNL

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## Objectives

- Develop technology road map for the SECA initiative.
- Coordinate the technology thrust area activities with SECA industrial teams.
- Coordinate technology development programs at universities, national laboratories and other research organizations.
- Hold meetings and workshops with industrial teams to discuss technical progress.
- Provide technical and topical progress reports to SECA members.

## Key Milestones

- Organized and conducted SECA Core Technology workshops to present the technical status of ongoing projects at universities, national laboratories and other research organizations.
- Coordinated technical work plans with industry team members consistent with the overall SECA program objectives.
- Published Core Technology topical reports, technical progress reports and workshop proceedings. Distributed published reports to the SECA team members.
- Frequently interacted with industry teams to address and prioritize the SOFC technology development needs.
- Developed a leadership team for the SECA core technology thrust areas
- Coordinated and participated in inter-agency (DOD, NASA) technology development meetings.
- Participated in international meetings and workshops.

## Approach

The SECA Core Technology Program management activity at PNNL is jointly conducted with National Energy Technology Laboratory (NETL) with the objective of coordinating and managing the SECA Core Technology program. The overall objective of this management program is to develop a technology road map consistent with the cost and performance targets of the SECA initiative, coordinate technical activities at universities, national laboratories and other research organizations and integrate the technology programs with industry teams. The CTP management activities consist of organizing and conducting technology workshops to gather and disseminate technical information, coordinate and review university, national laboratories and other research organizations programs, integrate and align ongoing R&D programs with the needs of the industry teams. The Core Technology management also participates in inter-agency technology development program activities to develop and utilize synergies and avoid duplication of work. Details of the activities are described below:

**SECA Core Technology Workshops:** Two SECA Core Technology workshops were held during the FY 2002 to gather, review, and disseminate technical information generated within the on-going technical programs. Participating industry teams have been encouraged to critique the technical activity and evaluate the adequacy of the technical work in terms of meeting the cost and performance targets of the SECA initiative. Workshop proceedings were published and distributed to the workshop participants and team members.

**Program Coordination:** The Core Technology Program management, in cooperation with NETL, coordinated various technology development programs being conducted at universities, national laboratories and other research organizations. Technical reviews and guidance were provided to investigators when needed. Findings of the programs were discussed with industry teams.

**Core Technology Thrust Area Leadership Team:** A core group of technical experts have been identified and selected from NETL, PNNL and ORNL to serve as the technology thrust area leaders for materials, manufacturing, fuel processing, modeling and simulation, power electronics and sensor and controls. Thrust area leaders provide much needed technical expertise and guidance towards the development and prioritization of technology development programs. Thrust area leaders also interact with industry teams in providing the current status of the technology. From time to time, white papers and reviews are prepared by these leaders and provided to industry teams for guiding them in assessing the adequacy of the technologies. Based on the input, the management team assesses and prioritizes the technology development programs. Core technology thrust area leadership team is presented in the table below.

| Thrust Area | NETL | PNNL/ORNL |
|---|---|---|
| Materials | Dr Lane W. Wilson | Dr Jeff Stevenson |
| Manufacturing | Mr. Wayne Surdoval | Dr. Prabhakar Singh |
| Fuel Processing | Dr. Dave Berry | Dr. Dave King |
| Modeling & Simulation | Dr. William Rogers | Dr. Moe Khaleel |
| Power Electronics | Dr. Don Collins | Dr. Don Adams |

**Industry Team Integration:** The SECA core technology management team has actively worked with the participating industry teams to integrate the ongoing technology programs in order to identify key technology barriers and meet the technology needs of the industries instrumental in meeting the cost and performance targets of the SECA initiative. In several meetings held with industry teams, topics were discussed, related to materials needs, simulation, modeling activities, etc., and tasks were planned to meet the identified needs. An advisory committee oversees the integration activity.

**Topical and Technical Progress Reports:** During the FY 2002, the SECA core technology management assembled and published topical and technical progress reports (hard copies and electronic versions) to disseminate technical information to the SECA members and fuel cell community. Non-disclosure agreements (NDA) were signed to disclose the ongoing PNNL technical results to all industry teams in a timely manner. Principal investigators were also encouraged to present their work at national and internal technical societies (American Society for Metals, American Ceramic Society, Electrochemical Society, etc.) as well as publish in technical journals.

**Inter-Agency Participation:** SECA core technology management actively participated in several inter-agency meetings to discuss the status of technical activities being conducted under the SECA initiative. Several discussions were held with US-DOD and NASA to integrate technology development programs. Such activities are expected to develop program synergy and avoid duplication of efforts. It is anticipated that coordinated programs will develop in the areas of materials, fuel processing, simulation etc., resulting in leveraging of resources.

**International Participation:** SECA Core Technology program management participated in several international meetings. Collaborations with European Union members are being developed to facilitate technology exchange.

## Conclusions

SECA Core Technology program management activity at PNNL, in collaboration with NETL:

- Coordinates the technology development programs conducted at universities, national laboratories and other research organizations.
- Holds workshops and reviews the technical progress.
- Integrates and prioritizes the technology development needs of the industry teams.
- Gathers, reviews and disseminates technical information through publication of topical reports, technical progress reports, technical journal articles and technical society meetings.
- Participates in national and international technical society meetings.
- Coordinates inter-agency technology development activities.